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450118-02282**IN THE CLAIMS**

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

**Listing of Claims**

1. (Currently Amended) An error rate estimating device for estimating the ~~an~~ error rate of an quadrature-modulated signal ~~when decoding the signal~~, the error rate estimating device ~~provided with~~ comprising:

counting means for counting ~~the a~~ number of times ~~of normalization is performed~~  
in a predetermined time period,

state metric calculating means for calculating performed when generating a state  
metric,

wherein normalization is being performed while said state metric is being  
calculated; within a predetermined time and

an estimating means for estimating the error rate of the signal ~~from the~~  
~~correspondence between~~ using the number of times of normalization is performed.  
~~and the error rate respectively determined for each different transmission system or each~~  
~~different coding rate based on the number of times of normalization counted by the counting~~  
~~means.~~

2. (Currently Amended) An error rate estimating device as set forth in claim 1,  
wherein the estimating means estimates the error rate based on a table establishing

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correspondence between the number of times ~~of~~ normalization is performed and the error rate on a channel.

3. (Currently Amended) An error rate estimating device as set forth in claim 1, wherein the estimating means inserts the number of times ~~of~~ normalization is performed ~~counted by the counting means~~ into a predetermined function.

4. (Currently Amended) An error rate estimating device as set forth in claim 1, wherein the counting means counts only the number of times ~~of~~ normalization is performed for a signal of a predetermined transmission system or a predetermined coding rate.

5. (Currently Amended) An error rate estimating method for estimating an error rate of a signal when decoding an quadrature-modulated signal,

said error rate estimating method comprising:

a counting step of counting ~~the a~~ number of times ~~of~~ normalization is performed in a predetermined time period;

a state metric calculating step for calculating a state metric,

wherein normalization is being performed while said state metric is being calculated; and

~~, performed when generating a state metric, within a predetermined time and~~

an estimating step of estimating the error rate of the signal using the number of times normalization is performed.

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~~from the correspondence between the number of times of normalization and the error rate respectively determined for each different transmission system or each different coding rate based on the number of times of normalization counted in the counting step.~~

6. (Currently Amended) An error rate estimating method as set forth in claim 5, wherein in the estimating step, the error rate is estimated based on a table establishing correspondence between the number of times of normalization is performed and ~~the an~~ error rate on a channel.

7. (Currently Amended) An error rate estimating method as set forth in claim 5, wherein in the estimating step, the number of times of normalization is performed ~~counted in the counting step~~ is inserted into a predetermined function.

8. (Currently Amended) An error rate estimating method as set forth in claim 5, wherein in the counting step, only the number of times of normalization is performed for a signal of a predetermined transmission system or a predetermined coding rate is counted.

9. (Currently Amended) An information recording medium for providing information for control executed by a receiver receiving and decoding an quadrature-modulated signal transmitted through a channel, wherein said control information includes:

a count instruction for counting the number of times of normalization is performed in a predetermined time period;

~~, performed when generating a state metric, within a predetermined time and~~

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a calculation instruction for calculating a state metric ,  
wherein normalization is being performed while said state metric is being  
calculated;  
an estimation instruction for estimating the error rate of the signal using the  
number of times normalization is performed.  
~~from the correspondence between the number of times of normalization and the error rate~~  
~~respectively determined for each different transmission system or each different coding rate~~  
~~based on the number of times of normalization counted when said count instruction is executed~~

10. (Currently Amended) An information recording medium as set forth in claim 9, wherein the estimation instruction estimates the error rate based on a table establishing correspondence between the number of times of normalization is performed and the an error rate on a channel.

11. (Currently Amended) An information recording medium as set forth in claim 9, wherein the estimation instruction inserts the number of times of normalization is performed ~~counted by the counting means~~ into a predetermined function.

12. (Currently Amended) An information recording medium as set forth in claim 9, wherein the count instruction counts only the number of times of normalization is performed for a signal of a predetermined transmission system or a predetermined coding rate.

13. (Currently Amended) An error rate estimating device for estimating an error

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rate of a signal when decoding a signal modulated by a plurality of transmission systems or coding rates,

said error rate estimating device provided with:

a judging means for judging a transmission system or coding rate of the signal;

a counting means for counting the a number of times of normalization is performed in a predetermined time period, performed when generating a state metric, for each of the plurality of transmission systems or coding rates;

state metric calculating means for calculating a state metric,

wherein normalization is being performed while said state metric is being calculated;

an estimating means for estimating the error rate for each signal from the correspondence between the number of times of normalization and the error rate respectively determined for each different transmission system or each different coding rate based on the number of times of normalization counted by the counting means; and

a selecting means for selecting one of a plurality of error rates for each signal estimated by the estimating means.

14. (Original) An error rate estimating device as set forth in claim 13, wherein said selecting means selects the error rate according to the transmission system or the coding rate judged by the judging means.

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15. (Original) An error rate estimating device as set forth in claim 13, wherein the selecting means selects an error rate to be output by comparing a plurality of error rates input with a predetermined reference value.

16. (Currently Amended) An error rate estimating method for estimating an error rate of a signal when decoding a signal modulated by a plurality of transmission systems or coding rates, said error rate estimating method comprising:

a judging step of judging a transmission system or coding rate of the signal;

a counting step of counting ~~the~~ a number of times of normalization is performed in a predetermined time period, performed when a state metric is generated, for each of the plurality of transmission systems or coding rates;

a state metric calculating step for calculating a state metric for each of the plurality of transmission systems or coding rates,

wherein normalization is being performed while said state metric is being calculated;

an estimating step of estimating the error rate for each signal from each of the plurality of transmission systems or coding rates using the correspondence between the number of times of normalization is performed and the error rate respectively determined for each different transmission system or each different coding rate based on the number of times of normalization counted in the counting step; and

a selecting step of selecting one of a plurality of error rates for each signal estimated in the estimating step.

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17. (Original) An error rate estimating method as set forth in claim 16, further comprising, in said selecting step, selecting the error rate according to the transmission system or the coding rate judged by the judging step.

18. (Original) An error rate estimating method as set forth in claim 16, further comprising, in said selecting step, selecting an error rate to be output by comparing a plurality of error rates input with a predetermined reference value.

19. (Currently Amended) An information recording medium for providing information for control executed by a receiver receiving a signal modulated by a plurality of transmission systems or coding rates sent through a channel, wherein said control information includes:

a judgment instruction for judging a transmission system or coding rate of the signal;

a count instruction for counting ~~the~~ a number of times of normalization is performed in a predetermined time period, performed when generating a state metric, within a predetermined time;

a calculation instruction for calculating a state metric,

wherein normalization is being performed while said state metric is being calculated;

an estimation instruction for estimating the error rate of the signal ~~from the correspondence between~~ using the number of times of normalization is performed and the error

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~~rate respectively determined for each different transmission system or each different coding rate based on the number of times of normalization counted in said count step; and~~

a selection instruction for selecting one of a plurality of error rates for each signal estimated in the estimating step.

20. (Currently Amended) An error rate estimating device for estimating an error rate of a signal when decoding a signal modulated by a plurality of transmission systems or coding rates,

said error rate estimating device comprising:

a counting means for counting the a number of times of normalization is performed in a predetermined time period, ~~performed when generating a state metric,~~ for each of the plurality of transmission systems or coding rates;

state metric calculating means for calculating a state metric,

wherein normalization is being performed while said state metric is being calculated;

an estimating means for estimating the error rate for each signal from each of the plurality of transmission systems or coding rates using ~~using by~~ the number of times of normalization is performed; counted by the counting means;

a multiplying means for determining a value for multiplication with the error rate for each signal according to a value of the error rate estimated by the estimating means for a predetermined transmission system or coding rate among the transmission systems or coding rates and multiplying with that value; and

an outputting means for adding and outputting the error rate for each signal output



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from the multiplying means.

21. (Original) An error rate estimating method for estimating an error rate of a signal when decoding a signal modulated by a plurality of transmission systems or coding rates,

said error rate estimating method comprising:

a counting step of counting the number of times of normalization is performed in a predetermined time period, performed when generating a state metric, for each of the plurality of transmission systems or coding rates;

a state metric calculating step for calculating a state metric for each of the plurality of transmission systems or coding rates,

wherein normalization is being performed while said state metric is being calculated;

an estimating step of estimating the error rate for each signal from each of the plurality of transmission systems or coding rates using by the number of times of normalization is performed counted in the counting step;

a multiplying step of determining a value for multiplication with the error rate for each signal according to a value of the error rate estimated by the estimating step for a predetermined transmission system or coding rate among the transmission systems or coding rates and multiplying with that value; and

an outputting step of adding and outputting the error rate for each signal output in the multiplying step.

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22. (Currently Amended) An information recording medium for providing information for control executed by a receiver receiving and decoding a signal modulated by a plurality of transmission systems or coding rates sent through a channel,

said control information including:

a count instruction for counting ~~the~~ a number of times of normalization is performed, ~~performed when generating a state metric~~, for each of the plurality of transmission systems or coding rates;

a calculation instruction for calculating a state metric,

wherein normalization is being performed while said state metric is being calculated;

an estimation instruction for estimating the error rate for each signal ~~by using the~~ number of times ~~of normalization is performed counted in the counting step;~~

a multiplication instruction for determining a value for multiplication with the error rate for each signal according to a value of the error rate estimated by the estimating step for a predetermined transmission system or coding rate among the transmission systems or coding rates and multiplying with that value; and

an output instruction for adding and outputting the error rate for each signal output from the multiplying step.